

Chile

Type: Small Market; Large Market Share

Chile's resource potential, its traditionally high electricity prices, and the expected market share captured by U.S. suppliers strongly suggests export competitiveness across each renewable energy technology through 2020. Chile is one of the few markets that should support exports in each renewable energy technology and, as such, remains a critical market for many U.S. exporters. Most export opportunities are expected in the solar sector, including both PV and Concentrated Solar Power (CSP).

Sector Rankings		Overall Rankings
Geothermal	6	Near-Term 8
Hydropower	2	
Solar	4	Mid-Term 8
Wind	15	

Few countries have as much renewable energy potential, and as much need for renewable energy as Chile. The Atacama Desert in Northern Chile is widely considered the world's best solar resource. Similarly, strong wind, geothermal, and hydropower resources exist across the country.

Partly as a result of this potential and partly because Chile has no domestic energy resources, Chilean policy-makers have made a firm commitment to support clean energy investment. Today, the country is home to a prodigious array of renewable energy projects across each technology subsector – many with the expectation of selling electricity on the spot market (almost unique among clean energy projects globally).

While most development is expected in the solar sector, export opportunities are expected across all clean energy technologies and services. Chile is one of only three markets to rank in the top ten in three different subsectors and the only market to rank in the top 15 in all four.

Overview of Renewable Energy Market

Chile must rely on imported electricity to fuel its economic growth, which has been consistent and robust for over a decade. Imports have grown dramatically as a result, rising from 42 percent of all energy consumption in 1980 to almost 75 percent today. The country's import dependence has caused electricity spot market prices to reach an average of \$112.3/MWh on the country's main electricity grid in

2013 – far more than other regional markets and a distinct competitiveness disadvantage for the Chilean economy.

The high prices have in turn led to an incredibly robust and attractive renewable energy market, supported by both private-sector consumers in Chile – namely, large mining operations – and the Chilean Government. The country is the first where wind and solar projects are being developed and financed on a purely merchant basis.¹³ While low oil prices may make imports less problematic for the Chilean economy, ITA believes electricity prices will remain high enough – and volatile enough – to make it likely that Chile will continue to invest in renewable energy going forward.

Chile's President, Michelle Bachelet, has called for 1.2 GW of non-conventional renewable energy over the next four years. The added capacity will support Chile's target of producing 20 percent of total electricity generation from renewable energy by 2025 (this is double Chile's original target). To facilitate this development, Chile has created a new \$6.7 million fund to seed private-sector investment in the sector.¹⁴

Since taking office, President Bachelet's administration has approved over 75 different renewable energy projects, with many more likely to be approved in the coming years.¹⁵ With no import restrictions and a preference for cutting-edge technologies, these projects should support a consistent export opportunity for years to come.

Moreover, Chile became the first country in Latin America to impose a carbon tax when in September 2014 its Congress passed the so-called *impuesto verde*. The tax, which will become operational in 2017, is set to impose a \$5 per tonne of CO₂ tax on emitters with installed capacity equal to or larger than 50 MW, excluding those that use biomass as a feedstock.¹⁶

Challenges and Barriers to Renewable Energy Exports

Despite its projected growth, Chile has only deployed 1.9 GW of non-conventional renewable energy technologies to date.¹⁷ This is largely a result of transmission challenges, which remain both persistent and disruptive. The country's electricity infrastructure is entirely privatized. The Chilean Government thus faces hurdles in incentivizing the development of new transmission lines, particularly in remote areas where renewable energy projects are often located.¹⁸

Chilean utilities, not having experience with large amounts of renewable power, have also shown signs of uneasiness about allowing additional renewable energy onto their electricity grids. Nevertheless, utility operators may have no choice but to support the use of intermittent renewable sources in their power mix, as the Chilean Government has announced that renewable energy will account for more than 75 percent of the nearly 5 GW of new capacity added to Chile main electricity grid through 2030.

Inviting grid operators to study how best to incorporate renewable energy into a reliable grid infrastructure could quell this problem and facilitate additional investment. It could also help facilitate a comfort with U.S. technologies that would no doubt benefit exporters looking to sell into the market.

Chile relies mostly on market conditions to support clean energy development (unlike other markets), because the changes in market dynamics could negatively influence investment in the future. For example, as Chile's ability to purchase fossil fuels on global markets increases, the relative attractiveness of renewable energy may decline. Power demand could also decline – particularly in the short-term – as demand for Chilean minerals decrease as a result of a slowdown in Chinese manufacturing.

Last year's *Top Markets Report* identified the lack of local financing for renewable energy as a major impediment to future growth. In 2014, there were significant signs of local investor interest in the sector,

and thus this concern is removed from our list of potential barriers. Project developers appear to be gaining greater access to both international and local financiers and this should support further capacity installations.

Opportunities for U.S. Companies

U.S. exporters are well-positioned in Chile due to the existing U.S.-Chile Free Trade Agreement and the strong bilateral commercial relationship between the United States and Chile.

Solar

Chile ranks fourth on ITA's list of largest projected solar export markets through 2016 – down two spots from last year's ranking. The drop is a result of fewer projects expected to come online, not a loss of market share captured by U.S. firms. Chile's Environmental Assessment Service recently approved 698 MW of new solar projects in September 2014, a number far smaller than other potential solar markets.¹⁹

While capacity growth may be somewhat limited in the short-term, ITA expects the solar industry to account for over half of all renewable energy exports to Chile through 2016. With no solar manufacturing capacity currently in operation, all of Chile's solar development will be met by imports, creating an important opportunity for U.S. equipment and service providers.

In October, President Bachelet helped break ground on a 141 MW solar project in Atacama Region III, which is being developed by First Solar, the largest U.S. solar company.²⁰ Once completed, the project will be the largest solar project in Latin America and should drive further interest in the sector, particularly for large mining companies with operations in the Atacama region.

Going forward, it will be important for exporters to keep Chilean decision-makers aware of the latest solar technology developments in the United States. In particular, Chile's mining sector has routinely required solar investments to demonstrate an energy storage component to fuel their 24/7 operations. Demonstrating advances in storage related to concentrated solar power may therefore help create opportunities for firms able to meet these requirements.

Wind

Chile's wind power development is expected to be limited in both the near and medium-term. Some development should take place, as the country's high priced electricity and tremendous resource potential make projects attractive to developers. For example, the Italian firm Enel Green Power began construction of a 61 MW wind project in September 2014 that is scheduled to begin operation in early 2015.²¹

Hydropower

ITA expects small- to medium-sized hydropower exporters to find opportunities developing projects in the short-term. In fact, Chile ranks behind only Canada in terms of projected hydropower exports to 2016. Run-of-river hydropower projects in low-flow areas like irrigation and already constructed navigational dams should provide the most export opportunities.

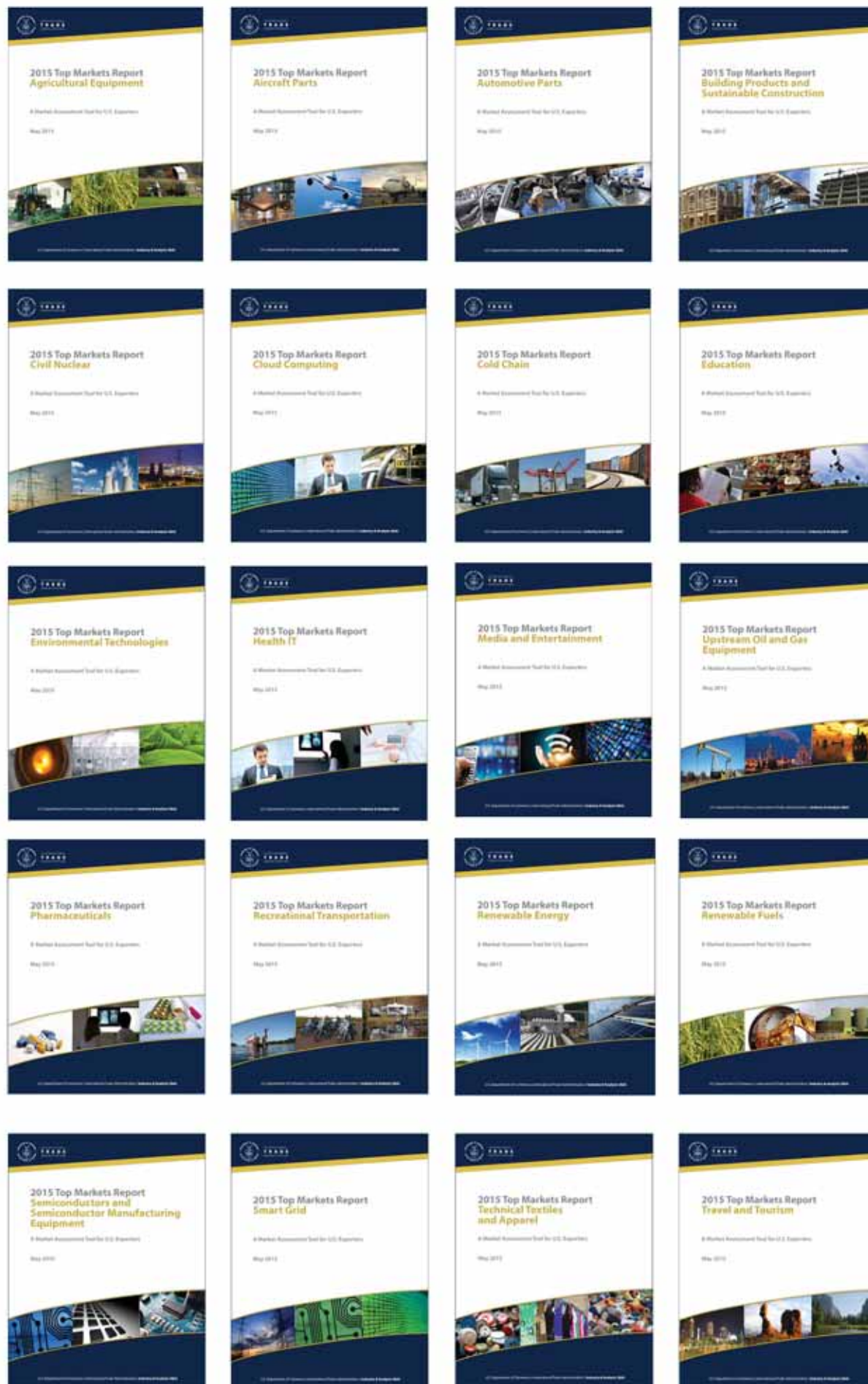
ITA does not expect significant opportunities in the large hydropower sector. In early 2014, the Chilean Government cancelled the environmental permit for

the proposed 2.7 GW HydroAysen project in Patagonia, likely signaling a dampening of support for large hydro development in the future.²²

Geothermal

Despite its vast geothermal potential, Chile has commissioned no projects to date. However, a 2012 tender generated \$250 million worth of investment for 20 geothermal energy exploration concessions that should be commissioned beginning in 2015, ranking Chile sixth on ITA list of top geothermal export markets to 2016.

Most of Chile's geothermal development, however, will be brought online between 2016 and 2020.²³ U.S. suppliers are expected to capture a staggering 50 percent of Chile's geothermal import market, making it one of the most U.S.-friendly business destinations of any renewable energy market globally.



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